

sub
A2
What is claimed is:

1.

A method for activating and modulating the immune system of an animal comprising:
growing bacteria in a medium;
exposing said bacteria to biological, chemical or physical stress for at least one period of time of 20 minutes or less so that the bacteria release a stress response product;
separating said medium and stress response product from said bacteria to form a separated product;
filtering said separated product to remove any stress response products having a molecular weight of greater than 10kDa to form a filtrate;
administering said filtrate to said animal.

2.

The method of claim 1 wherein said step of stressing comprises reducing the bioavailability of nutrients to said bacteria.

3.

The method of claim 2 wherein the bioavailability of nutrients is reduced by transferring the bacteria from a nutrient-rich media to a non-nutritive media.

4.

The method of claim 3 wherein said non-nutritive media comprises saline.

5.

The method of claim 4 wherein said saline media is a phosphate-buffered saline having a pH of about 7.6.

6.

The method of claim 1 wherein the bacteria is selected from the group consisting of *Lactobacillus*, *Staphylococcus*, *Streptococcus*, *Pediococcus*, *Pseudomonas*, *Bacillus*, *Escherichia*, *Listeria*, *Enterococcus*, and *Klebsiella*.

7.

The method of claim 6 wherein the bacteria is selected from the group consisting of *L. acidophilus*, *L. casei*, *L. fermentum*, *L. plantarum*, *L. monocytogenes*, *S. aureus*, *S. typhimurium*, *P. acidolactici*, *B. coryneforme*, *E. coli*, *E. faecium*, *S. pyogenes*, and *K. pneumoniae*.

8.

The method of claim 1 wherein the bacteria are propagated at a temperature of 37°C or less.

9.

The method of claim 8 wherein the temperature is in the range of 22°C to 32°C.

10.

The method of claim 1 wherein the bacteria are exposed to a stress while they are in their stationary phase.

11.

The method of claim 1 wherein the filtering step includes:
passing said separated product through a 0.22 µm filter to form a sterilized product; and
passing said sterilized product through a filter with a molecular weight cutoff of 10,000.

12.

The method of claim 1 wherein the filtrate containing the SRFs <10kDa is administered to an animal selected from the group consisting of humans, poultry and livestock.

13.

The method of claim 1 wherein the stress response product is administered in a concentration of about 1000 to 50,000 AU of said stress response product/ml.

14.

The method of claim 1 wherein the stress response product is administered in a manner selected from the group consisting of orally, topically, and parenterally.

15.

The method of claim 1 wherein the animal is administered stress response products having a size of between 0.5 and 3 kDa.

16.

The method of claim 1 wherein the stress response products are administered as an adjuvant for oral or parenteral vaccines.

17.

The method of claim 1 wherein the bacteria are exposed to sequential periods of stress.

18.

The method of claim 17 wherein the bacteria are exposed to sequential periods of stress by transferring the bacteria from growth media into non-nutritive media, then subsequently transferring the bacteria to non-nutritive media sequentially.

19.

The method of claim 18 wherein the bacteria is exposed to three sequential periods of stress.

20.

An immune modulating composition comprising: bacterial stress response factors, said stress release factors having a size of less than 10kDa; and a pharmaceutically acceptable carrier.

21.

An assay for measuring the stimulating capacities of stress response factors to rescue human monocytes from apoptosis, wherein said assay comprises a means capable of measuring the percentage of viable monocytes in a sample following exposure to stress release factors.

22.

An assay for measuring the potency of stress release factors, wherein said assay comprises a means of determining the percentage of mice that are protected from endotoxins following standardized exposure to stress release factors from various types of organisms.